WHAT IS CLAIMED IS:

1. An optical sensor for measuring a physical property of a strand comprising:

(a) a light source for emitting light onto the strand;

(b) a pixel array having a plurality of pixels facing the light source, the array and light source defining an area there between for positioning the strand whereby an image of the strand is captured on the array by generating an output value at each of the pixels relative to an intensity of light received at each of the pixels from the light source; and

(c) a signal processor for receiving and processing the output value for each of the pixels to extract a particular property of the strand.

2. An optical sensor according to claim 1, wherein the image of the strand is captured by the array and represented by a composite of the output values of the plurality of pixels wherein at least one of the pixels has been at least partially blocked by the image of the strand, and at least one of the pixels on each side of the image of the strand is completely unblocked.

3. An optical sensor according to claim 1, wherein the output value comprises an analog value, and the signal processor digitizes the analog value of each of the pixels to generate a digitized value for each of the pixels.

4. An optical sensor according to claim 1, wherein the light source comprises a light emitting diode.

5. An optical sensor according to claim 1, wherein each of the pixels includes a photo diode for generating an output voltage relative to the intensity of light received from the light source.

6. An optical sensor according to claim 1, wherein each of the pixels includes an integrator for integrating the output value over a timed interval.

7. An optical sensor according to claim 1, wherein the array includes an electronic shutter for providing a timed interval wherein the output value of each of the pixels is integrated.

8. An optical sensor according to claim 7, wherein the shutter is controlled by a closed loop function of the signal processor.

9. An optical sensor according to claim 8, wherein the light emitted from the light source is strobed in synchronism with the shutter whereby light is emitted from the light source when the shutter is engaged.

10. An optical sensor according to claim 9, wherein the signal processor is connected to the light source and controls the strobing of the light source whereby the signal processor synchronizes the light source and the shutter.

11. An optical sensor according to claim 1, wherein the signal processor provides a clock signal to each of the pixels to successively select each of the pixels and read the output value of the selected pixel.

12. An optical sensor according to claim 1, wherein the plurality of pixels is arranged in a single line on the array.

13. An optical sensor according to claim 1, wherein the array is positioned at an offset angle relative to the strand.

14. An optical sensor according to claim 1, wherein the strand comprises a fiber.

15. An optical sensor according to claim 1, wherein the sensor measures at least one property selected from the group consisting of interlace, diameter, denier, density, and broken filament.

16. A method for measuring a physical property of a strand comprising the steps of:

(a) providing an optical sensor comprising:

(i) a light source for emitting light onto the strand,

(ii) a pixel array having a plurality of pixels, and

(iii) a signal processor connected to the array for processing an output value from each of the pixels;

(b) positioning the strand between the array and the light source whereby an image of the strand is captured on the array by generating an

output value at each of the pixels relative to an intensity of light received at each of the pixels from the light source; and

(c) processing the output value in the signal processor to extract a particular property of the strand.

17. A method according to claim 16, wherein the step of positioning the strand comprises positioning the strand at an offset angle relative to the array.

18. A method according to claim 16, wherein the output value comprises an analog value, and further comprising the step of using the signal processor to digitize the analog value of each of the pixels to generate a digitized value for each of the pixels.

19. A method according to claim 16, further comprising the step of integrating the output value over a timed interval.

20. A method according to claim 19, further comprising the step of strobing the light emitted from the light source in synchronism with the timed interval.